

**VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY
SOUTH CENTRAL REGIONAL OFFICE**

FACT SHEET
FOR PROPOSED PERMITTING ACTION
UNDER 9 VAC 5 Chapter 80 Article 1 (TITLE V-CLEAN AIR ACT)

APPLICANT:

VA-30378 AIRS ID 51-031-0001
Dan River Inc.
P.O. Box 261
Danville, Virginia 24543

FACILITY LOCATION:

813 Lynchburg Avenue
Brookneal, Virginia
UTM Coordinates are ZONE: 17 EASTING: 682.2 km NORTHING: 4102.6 km

FACILITY DESCRIPTION:

SIC Code 2261 – This facility bleaches, finishes, and prints 100% cotton and cotton/polyester blends produced at off-site manufacturing plants. The finished textiles are either made into sheet goods or shipped off-site for further processing. The facility includes a sewing plant located in a separate building located on contiguous property. The facility has the potential to operate twenty-four (24) hours per day, seven (7) days per week, fifty-two (52) weeks per year.

EMISSIONS SUMMARY:

PLANTWIDE EMISSIONS SUMMARY [TONS PER YEAR]		
CRITERIA POLLUTANTS	POTENTIAL EMISSIONS	2000 ACTUAL EMISSIONS
Particulate Matter (PM-10)	116.7	39.7
Nitrogen Oxides (NOx)	515.3	77.7
Sulfur Dioxide (SO2)	858.7	167.0
Carbon Monoxide (CO)	174.5	40.5
Volatile Organic Compounds (VOC)	271.9	157.0

TITLE V PROGRAM APPLICABILITY BASIS:

This facility has the potential to emit 271.9 tons per year of VOCs, 858.7 tons per year of SO₂, 515.3 tons per year of NO_x, 116.7 tons per year of PM-10, and 174.5 tons per year of CO. Due to this facility's potential to emit over 100 tons per year of a criteria pollutant, Dan River Inc. - Brookneal Plant is required to have an operating permit pursuant to Title V of the Federal Clean Air Act as amended and 9 VAC 5 Chapter 80 Article 1.

LEGAL AND FACTUAL BASIS FOR DRAFT PERMIT CONDITIONS:

The State and Federally-enforceable conditions of the Title V Operating Permits are based upon the requirements of the Commonwealth of Virginia Federal Operating Permit Regulations for the purposes of Title V of the Federal Clean Air Act (9 VAC 5 Chapter 80 Article 1), and underlying applicable requirements in other state and federal rules.

Applicable requirement means all of the following as they apply to emission units in a Title V source:

- a. Any standard or other requirement provided for in the State Implementation Plan or the Federal Implementation Plan, including any source-specific provisions such as consent agreements or orders.
- b. Any term or condition of any preconstruction permit issued pursuant to 9 VAC 5-80-10, Article 8 (9 VAC 5-80-1700 et seq.) of this part or 9 VAC 5-80-30 or of any operating permit issued pursuant to 9 VAC 5 Chapter 80 Article 5, except for terms or conditions derived from applicable state requirements or from any requirement of these regulations not included in the definition of applicable requirement.
- c. Any standard or other requirement prescribed under these regulations, particularly the provisions of 9 VAC 5 Chapter 40 (9 VAC 5-40-10 et seq.), 9 VAC 5 Chapter 50 (9 VAC 5-50-10 et seq.) or 9 VAC 5 Chapter 60 (9 VAC 5-60-10 et seq.), adopted pursuant to requirements of the federal Clean Air Act or under ' 111, 112 or 129 of the federal Clean Air Act.
- d. Any requirement concerning accident prevention under ' 112(r)(7) of the federal Clean Air Act.
- e. Any compliance monitoring requirements established pursuant to either ' 504(b) or ' 114(a)(3) of the federal Clean Air Act or these regulations.
- f. Any standard or other requirement for consumer and commercial products under ' 183(e) of the federal Clean Air Act.
- g. Any standard or other requirement for tank vessels under ' 183(f) of the federal Clean Air Act.
- h. Any standard or other requirement in 40 CFR Part 55 to control air pollution from outer continental shelf sources.

- i. Any standard or other requirement of the regulations promulgated to protect stratospheric ozone under Title VI of the federal Clean Air Act, unless the administrator has determined that such requirements need not be contained in a permit issued under this article.
- j. With regard to temporary sources subject to 9 VAC 5-80-130, (i) any ambient air quality standard, except applicable state requirements, and (ii) requirements regarding increments or visibility as provided in Article 8 (9 VAC 5-80-1700 et seq.) of this part.
- k. Any standard or other requirement of the acid deposition control program under Title IV of the Clean Air Act or the regulations promulgated thereunder.
- l. Any standard or other requirement governing solid waste incineration under § 129 of the Clean Air Act.

Each State and Federally-enforceable condition of the draft Title V Operating Permit references the specific relevant requirements of 9 VAC 5 Chapter 80 Article 1 or the applicable requirement upon which it is based. Any condition of the draft Title V permit that is enforceable by the state but is not federally-enforceable is identified in the draft Title V permit as such.

MONITORING

Existing Boilers - Particulate Matter

The three 60×10^6 Btu/hr (heat input) Wickes (Ref. Nos. 5.1-5.3) and the 91.0×10^6 Btu/hr (heat input) Babcock and Wilcox (Ref. No. 5.4) boilers were constructed prior to March 17, 1972. These four boilers are subject to the particulate and SO₂ provisions of 9 VAC 5 Chapter 40, Article 8 of State Regulations. The three Wickes boilers (Ref. Nos. 5.1-5.3) combust coal and are equipped with multicyclones for particulate control. The Babcock & Wilcox boiler (Ref. No. 5.4) combusts only natural gas and does not have add-on pollution control devices.

The pound per million Btu particulate matter (PM) emission limit for the four boilers has been calculated per the equation in 9 VAC 5-40-900(A)(1) to be:

$$PM = 1.0906 \times K^{(-0.2594)} \Rightarrow 1.0906 \times (60 + 60 + 60 + 91)^{(-0.2594)} = 0.255 \text{ lb per } 10^6 \text{ Btu}$$

where K is the sum of the total heat input capacity of all existing boilers in 10^6 Btu/hour

Since Chapter 40, Article 8 limits the maximum allowable PM emissions from the fuel burning equipment installation (all four boilers), 76.5% of the hourly PM emissions has been allocated to the three Wickes boilers (Ref. Nos. 5.1-5.3). The maximum allowable PM emission rate from the three Wickes boiler's has been calculated to be:

Total PM-boilers = $(60 + 60 + 60 + 91) \text{ MMBtu} \times 0.255 \text{ lb/MMBtu} = 69.10 \text{ lb/hr}$

Wickes boiler's PM = $(76.5\% \times 69.10 \text{ lb/hr}) / (60 + 60 + 60) \text{ MMBtu} = 0.294 \text{ lb/MMBtu}$

The maximum allowable PM emission rate for the B&W boiler has been calculated to be:

B&W boiler's PM = $(23.5\% \times 69.10 \text{ lb/hr}) / (91 \text{ MMBtu}) = 0.178 \text{ lb/MMBtu}$

The expected hourly PM emissions from the Wickes boilers (Ref. Nos. 5.1-5.3) have been calculated using the stoker boiler PM emission factor (SCC #10200204) from AP42, Section 1.1, Bituminous Coal Combustion, dated 9/98 and with the multicyclone PM control efficiency of 90% to be:

$$\text{PM} = \frac{66 \text{ lb/ton} \times (100\% - 90\%) / 100}{2000 \text{ lb/ton} \times 12,600 \text{ Btu/lb} \times 1 \times 10^6 \text{ Btu}} = 0.262 \text{ lb/MM Btu}$$

The controlled hourly PM emissions from each of the Wickes boilers (Ref. Nos. 5.1-5.3) would be in compliance with the allowable PM emission of 0.294 lb/MMBtu ($0.262 < 0.294$).

The uncontrolled hourly PM emissions from the B & W boiler (Ref. No. 5.4) has been calculated using the PM emission factor (SCC #10200602) from AP42, Section 1.4, Natural Gas Combustion, dated 7/98 to be:

$$\text{PM} = \frac{7.6 \text{ lb}/10^6 \text{ ft}^3}{1000 \text{ Btu}/\text{ft}^3 \times 1 \times 10^6 \text{ ft}^3 / 1 \times 10^6 \text{ Btu}} = 0.0076 \text{ lb/MM Btu}$$

The controlled hourly PM emissions from the B&W boiler (Ref. No. 5.4) would be in compliance with the allowable PM emission of 0.178 lb/MMBtu ($0.0076 < 0.178$).

The permit requirement for the operation of a Zurn multicyclone for each coal boiler (Ref. Nos. 5.1-5.3) limits the amount of particulates that are emitted which are the source of visible emissions. As a result, compliance with the visible emission limit can be demonstrated if the Zurn multicyclones are operating properly. The permittee is required to perform an annual internal inspection of the multicyclone to insure its structural integrity. The weekly inspections will satisfy the periodic monitoring requirement for the visible emission limitation for the Wickes boiler stacks (Ref. Nos. 5.1-5.3). Weekly checks for visible emissions will limit malfunctions of the control equipment. As long as the control equipment is operating properly, there is little likelihood of violating the visible emission limitation. The control equipment will limit the amount of particulates that are emitted thereby limiting visible emissions from the Wickes boiler stacks (Ref. Nos. 5.1-5.3)

Existing Boilers-Sulfur Dioxide

The three $60 \times 10^6 \text{ Btu/hr}$ (heat input) Wickes (Ref. Nos. 5.1-5.3) and the $91.0 \times 10^6 \text{ Btu/hr}$ (heat input) Babcock and Wilcox (Ref. No. 5.4) boilers at this facility do not have add-on controls for SO₂ emissions. The three Wickes coal-fired boilers have been identified by refined computer modeling (ISCST, 4/92) to have the potential to violate the short term (1,300Fg/m³ - 3-hour std.

and 365 Fg/m³ - 24-hour std) SO₂ National Ambient Air Quality Standard (NAAQS). The permittee's ISCST modeling has determined that worst case 3-hour and 24-hour SO₂ impacts occur when the emission rate from all coal-fired boilers is 0.17769 x 10² g/sec, each. The conversion of the emission rate from g/sec to lb/hr is as follows:

$$\text{Max. SO}_2 = 3 \text{ boilers} \times (0.17769 \times 10^2 \text{ g/sec-boiler} \times 3,600 \text{ sec/hr}) / 453.6 \text{ g/lb} = 423.07 \text{ lb/hr}$$

By applying the ratio of the 24-hour NAAQS minus the background concentration (45 Fg/m³) and the modeled 24-hour impact to the maximum calculated SO₂ emissions, the maximum allowable hourly SO₂ emission rate is calculated to be:

$$\text{Max. Allowable 24-hour SO}_2 = \frac{(365 \text{ Fg/m}^3 - 45 \text{ Fg/m}^3)}{818.84 \text{ Fg/m}^3} \times 423.07 \text{ lb/hr} = 165.3 \text{ lb/hr}$$

By applying the ratio of the 3-hour NAAQS minus the background concentration (83 Fg/m³) and modeled 3-hour impact to the maximum calculated SO₂ emissions, the maximum allowable hourly SO₂ emission rate is calculated to be:

$$\text{Allowable SO}_2 = \frac{(1,300 \text{ Fg/m}^3 - 83 \text{ Fg/m}^3)}{1,419 \text{ Fg/m}^3} \times 423.07 \text{ lb/hr} = 362.84 \text{ lb/hr}$$

For this facility, the maximum allowable hourly SO₂ emissions cannot exceed 165.3 lb/hr for any one hour period, in order to comply with the secondary SO₂ NAAQS (24-hour < 3-hour).

In order to comply the secondary SO₂ NAAQS, the permittee has proposed the following restrictions; burn only coal with a sulfur content of less than 0.9% (by weight), the coal shall have a minimum heat content of 12,600 Btu/lb (as burned), only two of the three Wickes boilers (Ref. Nos. 5.1-5.3) shall be operated concurrently, and the Babcock and Wilcox (B&W) boiler (Ref. No. 5.4) shall burn only natural gas.

The maximum hourly SO₂ emissions from the Wickes boilers (Ref. Nos. 5.1-5.3) have been calculated using the minimum allowable coal heat content, the maximum allowable coal sulfur content, and the SO₂ emission factor (SCC #10200204) from AP42, Section 1.1, Bituminous Coal Combustion, dated 9/98 to be:

$$\text{SO}_2 = \frac{2 \times 60.0 \text{ MMBtu} \times 38 \text{ lb/ton} \times 0.9\% \text{ S}}{2000 \text{ lb/ton} \times 12,600 \text{ Btu/lb}} = 162.86 \text{ lb/hr}$$

The maximum allowable hourly SO₂ emissions from the coal-fired boilers are less than 165.3 lb/hr, which demonstrates compliance to the secondary SO₂ NAAQS (24-hour) of 365 Fg/m³.

To demonstrate compliance to the 9 VAC 5-40-930 SO₂ emission limit of 2.64 lb/MMBtu, the maximum allowable SO₂ emission rate from the Wickes boilers (Ref. Nos. 5.1-5.3) has been calculated to be:

$$\text{SO}_2 = \frac{162.86 \text{ lb/hr}}{120.0 \text{ MMBtu/hr}} = 1.357 \text{ lb/MMBtu}$$

Note: only two of the three Wickes boilers (Ref. Nos. 5.1-5.3) may be operated concurrently

The SO₂ emissions from the B & W boiler (Ref. No. 5.4) have been calculated using the SO₂ emission factor (SCC #10200602) from AP42, Section 1.4, Natural Gas Combustion, dated 7/98 to be:

$$\text{SO}_2 \text{ (lb/MMBtu)} = \frac{0.6 \text{ lb}/10^6 \text{ ft}^3}{1000 \text{ Btu}/\text{ft}^3 \times 1 \times 10^6 \text{ ft}^3 / 1 \times 10^6 \text{ Btu}} = 0.0006 \text{ lb/MMBtu}$$

The maximum total SO₂ emissions from the boiler plant is the sum of the Wickes (Ref. Nos. 5.1-5.3) and B&W boilers (Ref. No. 5.4), which is :

$$\text{SO}_2 = 1.357 \text{ lb/MMBtu} + 0.0006 \text{ lb/MMBtu} = 1.358 \text{ lb/MMBtu}$$

The maximum allowable SO₂ emissions from the four boilers have been calculated to be 1.358 lb/MMBtu, which is less than the 9 VAC 5-40-930 SO₂ emission limit of 2.64 lb/MMBtu. Therefore, the 9 VAC 5-40-930 SO₂ emission limit has been streamlined out of the Title V permit.

Coal supplier's fuel certification (Btu/lb & %S) and daily operator's logs will be used to demonstrate compliance with the 165.3 lb/hr (24-hour average) SO₂ limit. The permittee will be required to perform a Method 5 particulate test and concurrent Method 9 test (Ref. 40 CFR 60, Appendix A) on one of the three Wickes (Ref. Nos. 5.1-5.3) at least once during the life of this permit, but not to exceed 5 years, to demonstrate compliance with the 0.294 lb/MM Btu PM limit per 9 VAC 5 Chapter 40, Article 8. Additionally, the permittee will conduct a weekly visible emission observation on the boiler(Ref. Nos. 5.1, 5.2, 5.3, 5.4) stacks (see Periodic Monitoring). Calendar year records of coal, natural gas, and LPG consumption will be reported by the permittee through the annual emission statement (9 VAC 5-80-340 C) and annual emissions update. The permittee will maintain records of fuel consumption, sulfur content, the boiler F-factor, pollutant-specific emission factors, visible observation, maintenance and malfunction reports, and the emission calculations on site for inspection.

Permitted Boiler (Ref. No. 7)

The 2.93×10^6 Btu/hr (heat input) distillate oil-fired Cleaver Brooks boiler (Ref. No. 7) is covered by the permit to construct and operate dated February 19, 1982, and is subject to the provisions of 9 VAC 5 Chapter 50 (9 VAC 5-50-10 et seq.). This boiler is located at the sewing plant located on contiguous property and is used for space heat. This permit limits the approved fuel to distillate oil No. 1 and No. 2 and annual consumption to 183,456 gallons/yr. Visible emissions from the Cleaver Brooks boiler (Ref. No. 7) is limited to 20%, except for one six-minute period per hour not to exceed 30% opacity, except for start up, shut down, and malfunction. There are no add-on air pollution control devices on the Cleaver Brooks boiler (Ref. No. 7). The permittee will maintain a record of distillate oil consumption, calculated monthly as the sum of each consecutive twelve month period, operator training, and will conduct a weekly visible emission observation (see Periodic Monitoring)

Bleach Ranges (Ref. Nos. 1.1 & 1.2)-Particulate Matter

The two bleach ranges (Ref. Nos. 1.1 & 1.2), each rated at 12,000 yds/hr (11,542 lb/hr), were installed in 1984 and did not require a permit to construct and operate. The loose fibers and lint are removed from the greige fabric in the Menzel flame singers prior to three wash steps and a bleach step. The flame singers are the only source of PM from the bleach ranges, as the remaining process steps are performed in a totally saturated state. The bleach ranges (Ref. Nos. 1.1 & 1.2) are subject to the PM and SO₂ provisions of Chapter 40, Article 4, but the opacity limits of 9 VAC 5-50-80. The particulate emissions from each of the bleach ranges (Ref. Nos. 1.1 & 1.2) are limited to process weight rate equation per 9 VAC 5-40-260 (C). The maximum allowable particulate emissions from each bleach range have been calculated to be:

$$PM_{bleach\ range} = 4.10 \times p^{(0.67)} \Rightarrow 4.10 \times (11,542 / 2000)^{0.67} = 13.27 \text{ lb/hr}$$

where p is the process weight rate in tons of fabric per hour

The only sources of particulate emissions from the bleach ranges (Ref. Nos. 1.1 & 1.2) are the flame singers. The permittee submitted a flame singer PM emission factor of 0.1 lb_{PM}/100 lb fabric from a similar permitted facility. The potential uncontrolled PM emissions from each of the bleach ranges have been calculated to be 11.54 lb/hr. The permittee has submitted a statement dated June 12, 2000, that the actual particulate emissions are nil due to the velocity (575 ft/min) and temperature (363EF) of the singer exhaust stacks, which causes the broken fibers to drop back on the cloth and are washed down the drain. This statement was supported by the permittee's visual emission examination, which did not exceed 5% opacity (reference 40 CFR 60, Appendix A, Method 9). The bleach ranges (Ref. Nos. 1.1 & 1.2) are in compliance with the particulate matter emissions limitations per 9 VAC 5-40-260 (A) PM emission limit of 13.27 lb/hr.

Bleach Ranges (Ref. Nos. 1.1 & 1.2)-Sulfur Dioxide

The burners on the natural gas/LPG-fired Menzel Flame Singers are rated at 12.2×10^6 Btu/hr, and are subject to the 2.64K SO₂ emission limits 9 VAC 5-40-280 (B).

The SO₂ emission rate from the bleach ranges (Ref. Nos. 1.1 & 1.2) has been calculated using the SO₂ emission factor (SCC #10200602) from AP42, Section 1.4, Natural Gas Combustion, dated 10/96 to be:

$$SO_2 = \frac{0.6 \text{ lb}/10^6 \text{ ft}^3}{1000 \text{ Btu}/\text{ft}^3} = 0.0006 \text{ lb/MMBtu}$$

Since the burners are dual fuel, the SO₂ emission rate from the bleach ranges (Ref. Nos. 1.1 & 1.2) has been calculated using the SO₂ emission factor (SCC #10201002) from AP42, Section 1.5, Liquefied Petroleum Gas (LPG) Combustion, dated 10/96, and a LPG fuel sulfur content of 15 grains per 100 ft³ to be:

$$SO_2 = \frac{0.1 \times (0.09 \times 15) \%S \text{ lb}/10^3 \text{ gal}}{1000 \times 90,500 \text{ Btu}/10^3 \text{ gal}/10^6 \text{ Btu}} = 0.0015 \text{ lb/MMBtu}$$

The maximum SO₂ emission rate from each of the bleach ranges (Ref. Nos. 1.1 & 1.2) has been calculated to be 0.0015 lb/MM Btu (LPG), which is in compliance with the 2.64 lb/MM Btu limit per 9 VAC 5-40-280. The permittee will keep records of malfunctions, operating procedures, maintenance schedules, and service records, and will conduct a weekly visible emission observation (see Periodic Monitoring). Annual VOC and particulate emissions from the bleach ranges (Ref. Nos. 1.1 & 1.2) and facility-wide natural gas/LPG consumption will be reported by the permittee through the annual emission statement (9 VAC 5-80-340 C) and annual emissions update.

Finishing Ranges (Ref. Nos. 2.1 & 2.2)-Particulate Matter

The two finishing ranges (Ref. Nos. 2.1 & 2.2), each rated at 9,600 yds/hr (9,162 lb/hr), were installed in 1984 and did not require a permit to construct and operate. The finishing ranges apply resins or chemicals, for such processes as mercerizing, permanent press, fabric softening, and/or stain release. Each finishing range also includes a natural gas/LPG-fired dryer rated at 12.1 x 10⁶ Btu/hr. The finishing ranges are subject to the PM and SO₂ provisions of Chapter 40, Article 4 of the State Regulations, but the opacity limit of 9 VAC 5-50-80. The particulate emissions from each of the finishing ranges are limited to process weight rate equation per 9 VAC 5-40-260 (C). The maximum allowable emissions from the each finishing range have been calculated to be:

$$PM_{finishing\ range} = 4.10 \times p^{(0.67)} \Rightarrow 4.10 \times (9,162/2000)^{0.67} = 11.37 \text{ lb/hr}$$

where p is the process weight rate in tons of fabric per hour

The permittee has stated that there are no PM emissions from the finishing ranges (Ref. Nos. 2.1 & 2.2), since all the loose fibers have been removed by the flame singers. However, for completeness, the bleach range PM emission factor will be used to calculate PM emissions from the finishing ranges. The uncontrolled PM emissions from each of the finishing ranges have been calculated to be:

$$PM_{finishing\ range} = \frac{9,162 \text{ lb}_{\text{fabric}}/\text{hr} \times 0.1 \text{ lb}_{\text{PM}}/100 \text{ lb}_{\text{fabric}}}{100 \text{ lb}_{\text{fabric}}} = 9.16 \text{ lb/hr}$$

The uncontrolled PM emissions from each of the finishing ranges (Ref. Nos. 2.1 & 2.2) have been calculated to be 9.16 lb/hr, which is in compliance with the 9 VAC 5-40-260 (A) PM limit of 11.37 lb/hr.

Finishing Ranges (Ref. Nos. 2.1 & 2.2)-Sulfur Dioxide

The burners on the natural gas/LPG-fired finishing range (Ref. Nos. 2.1 & 2.2) dryers are rated at 12.1 x 10⁶ Btu/hr, and are subject to the 2.64 lb/MM Btu SO₂ emission limit per 9 VAC 5-40-280 (B). The SO₂ emission rate from the finishing ranges (Ref. Nos. 2.1 & 2.2) has been calculated using the SO₂ emission factor (SCC #10200602) from AP42, Section 1.4, Natural Gas Combustion, dated 10/96 to be:

$$SO_2 = \frac{0.6 \text{ lb}/10^6 \text{ ft}^3}{1000 \text{ Btu}/\text{ft}^3} = 0.0006 \text{ lb/MMBtu}$$

Since the burners are dual fuel, the SO₂ emission rate from the finishing ranges (Ref. Nos. 2.1 & 2.2) has been calculated using the SO₂ emission factor (SCC #10201002) from AP42, Section 1.5, Liquefied Petroleum Gas (LPG) Combustion, dated 10/96, and a LPG fuel sulfur content of 15 grains per 100 ft³ to be:

$$\text{SO}_2 = \frac{0.1 \times (0.09 \times 15) \% \text{S lb}/10^3 \text{ gal}}{1000 \times 90,500 \text{ Btu}/10^3 \text{ gal}/10^6 \text{ Btu}} = 0.0015 \text{ lb/MMBtu}$$

The maximum SO₂ emission rate from the finishing ranges (Ref. Nos. 2.1 & 2.2) has been calculated to be 0.0015 lb/MM Btu (LPG), which is in compliance with the 2.64 lb/MM Btu limit per 9 VAC 5-40-280. The permittee will keep records of malfunctions, operating procedures, maintenance schedules, and service records, and will conduct a weekly visible emission observation (see Periodic Monitoring). Annual VOC emissions from the finishing ranges (Ref. Nos. 2.1 & 2.2) and facility-wide natural gas/LPG consumption will be reported by the permittee through the annual emission statement (9 VAC 5-80-340 C) and annual emissions update.

Peter Zimmer Print Ranges (Ref. Nos. 4.1, 4.2, & 4.3)-Particulate Matter

The three Peter Zimmer print ranges (Ref. Nos. 4.1, 4.2, & 4.3), each rated at 9,000 yds/hr (8,589 lb/hr), were installed in 1974 and did not require a permit. The print ranges use a high solids, low VOC color pastes, and multiple rotating screens to apply separate colors to the fabric in order to complete a specific pattern. Each print range (Ref. Nos. 4.1, 4.2, & 4.3) include a 5.0 x 10⁶ Btu/hr natural gas/LPG-fired predryer and 5.0 x 10⁶ Btu/hr natural gas/LPG-fired curing oven. The three print ranges (Ref. Nos. 4.1, 4.2, & 4.3) are subject to the PM, SO₂, and opacity provisions of Chapter 40, Article 4 of the State Regulations. The particulate emissions from each of the finishing ranges (Ref. Nos. 4.1, 4.2, & 4.3) are limited to process weight rate equation per 9 VAC 5-40-260 (C). The maximum allowable emissions from each finishing range have been calculated to be:

$$\text{PM}_{\text{print range}} = 4.10 \times p^{(0.67)} \Rightarrow 4.10 \times (8,589 / 2000)^{0.67} = 10.89 \text{ lb/hr}$$

where p is the process weight rate in tons of fabric per hour

The permittee has stated that there are no PM emissions from the print ranges (Ref. Nos. 4.1, 4.2, & 4.3), since all the loose fibers have been removed by the flame singers and the color pigments adhere to the fabric. However, for completeness, the bleach range PM emission factor will be used to calculate PM emissions from the print ranges. The uncontrolled PM emissions from each of the print ranges have been calculated to be:

$$\text{PM}_{\text{print range}} = \frac{8,589 \text{ lb}_{\text{fabric}}/\text{hr} \times 0.1 \text{ lb}_{\text{PM}}/100 \text{ lb}_{\text{fabric}}}{100 \text{ lb}_{\text{fabric}}} = 8.59 \text{ lb/hr}$$

The uncontrolled PM emissions from each of the print ranges (Ref. Nos. 4.1, 4.2, & 4.3) have been calculated to be 8.59 lb/hr, which is in compliance with the 9 VAC 5-40-260 (A) limit of 10.89 lb/hr.

Peter Zimmer Print Ranges (Ref. Nos. 4.1, 4.2, & 4.3)-Sulfur Dioxide

The total burner capacity for each of the natural gas/LPG-fired Peter Zimmer print range dryers (Ref. Nos. 4.1, 4.2, & 4.3) are rated at 10.0×10^6 Btu/hr, and are subject to the 2.64 lb/MM Btu SO₂ emission limits 9 VAC 5-40-280 (B). The SO₂ emission rate from each of the print ranges (Ref. Nos. 4.1, 4.2, & 4.3) has been calculated using the SO₂ emission factor (SCC #10200602) from AP42, Section 1.4, Natural Gas Combustion, dated 7/98 to be:

$$\text{SO}_2 = \frac{0.6 \text{ lb}/10^6 \text{ ft}^3}{1000 \text{ Btu}/\text{ft}^3} = 0.0006 \text{ lb/MMBtu}$$

Since the burners are dual fuel, the SO₂ emission rate from the existing print ranges (Ref. Nos. 4.1, 4.2, & 4.3) has been calculated using the SO₂ emission factor (SCC #10201002) from AP42, Section 1.5, Liquefied Petroleum gas (LPG) Combustion, dated 10/96, and a LPG fuel sulfur content of 15 grains per 100 ft³ to be:

$$\text{SO}_2 = \frac{0.1 \times (0.09 \times 15) \% \text{S lb}/10^3 \text{ gal}}{1000 \times 90,500 \text{ Btu}/10^3 \text{ gal}/10^6 \text{ Btu}} = 0.0015 \text{ lb/MMBtu}$$

The maximum SO₂ emission rate from each of the existing print ranges (Ref. Nos. 4.1, 4.2, & 4.3) has been calculated to be 0.0015 lb/MM Btu (LPG), which is in compliance with the 2.64 lb/MM Btu limit per 9 VAC 5-40-280. The permittee will keep records of malfunctions, operating procedures, maintenance schedules, and service records, and will conduct a weekly visible emission observation (see Periodic Monitoring). Annual VOC emissions from the finishing ranges (Ref. Nos. 4.1, 4.2, & 4.3) and facility-wide natural gas/LPG consumption will be reported by the permittee through the annual emission statement (9 VAC 5-80-340 C) and annual emissions update.

Aztec Print Range (Ref. No. 4.4)

The Aztec print range (Ref. No. 4.4), which is rated at 3,438 yds/hr (3,281 lb/hr) and has $4-2.0 \times 10^6$ Btu/hr natural gas/LPG-fired burners, that was initially permitted on October 17, 1997. This initial permit was subsequently superseded by the permit to construct and operate dated September 8, 2000. Compliance with the VOC emission limits for the print range (Ref. No. 4.4) will be determined by mass balance calculations using consumption of print paste, percentage of volatile organic compounds (VOC) in each print paste and chemical additives as stated in a Certified Product Data Sheet or equivalent reference. This facility is not connected to a POTW, and 100% volatility of all VOCs from the print range will be used to calculate VOC emissions. The permittee will keep records of the equations and supporting documentation used to determine compliance with the VOC emissions from this print range, calculated monthly as the sum of each 12-month period. The facility-wide natural gas/LPG consumption will be reported by the permittee through the annual emission statement (9 VAC 5-80-340 C) and annual emissions update. Moreover, the permittee will conduct a weekly visible emission observation (see Periodic Monitoring).

Zimmer Flying Change Print Range (Ref. No. 4.5)

The Zimmer Flying Change print range (Ref. No. 4.5), which is rated at 9,000 yds/hr (8,589 lb/hr), has $4\text{--}2.0 \times 10^6$ Btu/hr natural gas/LPG-fired burners, and was permitted on May 4, 1999, which was superseded by the permit dated September 8, 2000. Compliance with the VOC emission limits for the print range (Ref. No. 4.5) will be determined by mass balance calculations using consumption of print paste, percentage of volatile organic compounds (VOC) in each print paste and chemical additive as stated in a Certified Product Data Sheet or equivalent reference, and assuming 100% evaporation of the VOCs. The permittee will keep records of the equations and supporting documentation used to determine compliance with the VOC emissions from this print range, calculated monthly as the sum of each 12-month period, and will conduct a weekly visible emission observation (see Periodic Monitoring). The facility-wide natural gas/LPG consumption will be reported by the permittee through the annual emission statement (9 VAC 5-80-340 C) and annual emissions update.

Aeroglide Sludge Dryer (Ref. No. 6)

The Aeroglide sludge dryer (Ref. No. 6) is rated at 4,170 lb_{sludge}/hr and has a 4.3×10^6 Btu/hr natural gas/LPG-fired burner. The sludge dryer is covered by the permit to construct and operate dated December 23, 1991, as amended on December 1, 1993. The particulate emissions from the sludge dryer are controlled by an Aeroglide cyclone and Sly wet impinger scrubber, connected in series. The permittee will continuously monitor the water flow and pressure drop in the scrubber, in addition to the exit temperature of the exhaust gasses. The permittee will maintain a record of annual hours of operation calculated monthly as the sum of each consecutive twelve month period, operator training, and will conduct a weekly visible emission observation (see Periodic Monitoring). The facility-wide natural gas/LPG consumption will be reported by the permittee through the annual emission statement (9 VAC 5-80-340 C) and annual emissions update.

PERIODIC MONITORING

Monitoring of opacity will require the source to, at least one time per week, observe for the presence of visible emissions from the exhaust stacks from the boilers (Ref. Nos. 5.1-5.4, 7), bleach ranges (Ref. Nos. 1.1 & 1.2), finishing ranges (Ref. Nos. 2.1 & 2.2), print ranges (Ref. Nos. 4.1-4.5), and sludge dryer (Ref. No. 6), when these emission units are operating. If visible emissions are observed, the permittee will have the option to take timely corrective action to resume operations without visible emissions or perform a VEE in accordance with 40 CFR 60, Appendix A, Method 9 to assure visible emissions' compliance. The permittee will keep a log of observations, any VEE recordings and any corrective actions. If any emission unit has not operated for any period during the week, this fact shall be noted in the individual log, and the visible emission observation for the idle emission unit will not be required.

At least once each permit term, but not to exceed five years, the permittee shall conduct a PM stack test and a concurrent visible emission evaluation (VEE) (40 CFR 60, Appendix A, Method 5 and Method 9) on one of the three Wickes coal-fired boilers (Ref. Nos. 5.1, 5.2, & 5.3) to determine compliance with the pound per million Btu emission limits in the Title V permit. The test results will be reduced and reported in accordance with 9 VAC 5-50-30.

REQUEST FOR VARIANCES OR ALTERNATIVES:

None

COMMENT PERIOD:

The public notice appeared in the Union Star on September 19, 2001.

Beginning Date: September 19, 2001

Ending Date: October 19, 2001

All written comments should be addressed to the following individual and office:

Department of Environmental Quality
South Central Regional Office
7705 Timberlake Road
Lynchburg, VA 24502
Phone: (434) 582-5120 Fax: (434) 582-5125

PROCEDURE FOR REQUESTING PUBLIC HEARING:

During the public comment period any interested person may submit written comments on the draft permit and may request a public hearing, if no public hearing has already been scheduled. A request for a public hearing shall be in writing to the above address and shall state the nature of the issues proposed to be raised in the hearing. The Director shall grant such a request for a hearing if he concludes that a public hearing is appropriate. Any public hearing shall be held in the general area in which the facility is located.

COMMONWEALTH OF VIRGINIA
Department of Environmental Quality
South Central Regional Office

STATEMENT OF LEGAL AND FACTUAL BASIS

Addendum to the December 26, 2001 Statement of Legal and Factual Basis

Dan River Incorporated
Brookneal (Campbell County), Virginia
Permit No. VA-30378

Title V of the 1990 Clean Air Act Amendments required each state to develop a permit program to ensure that certain facilities have federal Air Pollution Operating Permits, called Title V Operating Permits. As required by 40 CFR Part 70 and 9 VAC 5 Chapter 80, Dan River Incorporated has applied for a significant modification to their Title V Operating Permit for its Brookneal, Virginia facility. The Department has reviewed the application and has prepared a significant modification for the Title V Operating Permit.

Engineer/Permit Contact: _____

Date:

Air Permit Manager: _____

Date:

Regional Director: _____

Date:

1. FACILITY INFORMATION

Permittee

Dan River Incorporated
P.O. Box 261
Danville, VA 24543

Facility

Dan River Inc, - Brookneal
813 Lynchburg Avenue
Brookneal, Virginia
AFS ID No. 51-031-0001

2. SOURCE DESCRIPTION

SIC Code 2261 – This facility bleaches, finishes, and prints 100% cotton and cotton/polyester blends produced at off-site manufacturing plants. The finished textiles are either made into sheet goods or shipped off-site for further processing. The facility includes a sewing plant located in a separate building located on contiguous property. The facility has the potential to operate twenty-four (24) hours per day, seven (7) days per week, fifty-two (52) weeks per year.

3. EMISSIONS SUMMARY:

PLANTWIDE EMISSIONS SUMMARY [TONS PER YEAR]		
CRITERIA POLLUTANTS	POTENTIAL EMISSIONS (Pre-Modification)	POTENTIAL EMISSIONS (Post-Modification)
Particulate Matter (PM-10)	116.7	88.7
Nitrogen Oxides (NOx)	515.3	513.5
Sulfur Dioxide (SO2)	858.7	852.1
Carbon Monoxide (CO)	174.5	174.0
Volatile Organic Compounds (VOC)	271.9	264.0

The project associated with this permit action created limits affecting the facility's major status for PM-10. Due to the new limits, the potential to emit (PTE) PM-10 for the facility was reduced from 116.5 TPY to 88.7 TPY. The resulting PTE is below the major source threshold of 100 TPY for PM-10. Dan River is therefore no longer a Title V major source for PM-10. The facility is still a Title V major source for SO₂, NOx, CO, VOC and hazardous air pollutants (HAPs).

4. SIGNIFICANT PERMIT MODIFICATION INFORMATION

This significant permit modification is being generated to incorporate Dan River's New Source Review Permit dated 7/10/2003, as amended 6/23/2004 (hereafter referred to as the NSR permit). The NSR permit was the preconstruction approval for the installation of a new printing range. The project did not contravene any condition of this Title V permit; hence, permit incorporation was not required prior to construction or operation of the new unit. The Title V permit modification application was received on December 1, 2004 and deemed complete on January 10, 2005, less than twelve months after the unit became subject to these requirements.

This significant Title V permit modification also includes references to the applicable requirements for the Brookneal facility from the National Emission Standards for Hazardous Air Pollutants: Printing, Coating and Dyeing of Fabrics and Other Textiles (Subpart OOOO).

The Mercury NESHAP (40 CFR 61.50) applies to the Aeroglide sludge dryer (Ref. No. 6). The dryer was originally permitted on December 23, 1991, amended on December 1, 1993 and was put into service on February 21, 1994. A test to determine metal concentration in the sludge was performed for a variety of metals, including mercury. This test, performed using an unapproved protocol, showed mercury levels below the detection limit of 0.001 mg/kg. The requirements for the NESHAP were included in neither the NSR permit nor the Title V permit obtained on December 26, 2001. Dan River was notified of this omission and subsequently performed the sludge sampling test in lieu of stack testing or obtaining an emissions testing waiver. The test resulted in emissions calculated to be 2.01 grams/day, 0.063% of the emission limitation set forth in 40 CFR 61.52. Applicable requirements from the Mercury NESHAP have been included in this Title V significant modification.

Dan River has requested that two stacks currently referenced as process vents be properly identified as steam cans. This definition provides the basis to remove the stacks from the list of stacks requiring VEE on a weekly basis. The visible emissions evaluation requirements for the stacks (Ref Nos. 2FR04, 2FR05, 3FR04 and 3FR05) have been removed during this permit modification.

Finally, this significant Title V permit modification updates the applicable requirements to match the current Title V permit boilerplate language and condition sequence.

5. COMPLIANCE STATUS

For Title V permitting purposes, discussion of the compliance status is considered relevant to determining whether a compliance plan must be included in the Title V permit. Based on compliance evaluations and the completion of 40 CFR 61.54 notification and testing requirements, there are no compliance issues associated with this facility.

6. EMISSION UNIT AND CONTROL DEVICE IDENTIFICATION

Generally, the emission units and control devices at Brookneal remain as described in the Statement of Basis dated 12/26/01. However, the NSR permit does alter equipment at the site as follows:

- Zimmer Flying Print Range 4.1a is installed.
- Zimmer Flying Print Range 4.1 is removed.
- The number of stacks for print range 4.1a increases to four from the three in place for the removed range 4.1.

7. EMISSION UNIT APPLICABLE REQUIREMENTS REVISIONS

The requirements are taken from the NSR permit dated 7/10/2003, as amended 6/23/2004. These conditions are to be added to the Title V permit with this significant modification.

7.1 Limitations

The permit limits established in the NSR permit are included without alteration. Requirements include an emissions limitation with a corresponding throughput limitation, limits on fuel type, and requirements for maintenance of equipment, including scheduling and record-keeping. The visible emission limit is established in 9 VAC 5-50-80, a requirement for all new and modified sources. BACT for the range was determined to be no additional controls.

7.2 Testing

Condition 3 of the NSR permit establishes the requirement that the equipment be constructed to allow for emissions testing with reasonable notice.

The original NSR permit, dated 7/10/2003, contained a requirement for stack testing and concurrent Method 9 evaluations no later than 180 days after installation of the new range. These conditions were met on 2/10/2004, and subsequently removed from the NSR permit during the 6/23/2004 amendment.

7.3 Periodic Monitoring

Condition 7 of the NSR permit establishes periodic visible emissions monitoring will be completed as with print ranges included in the Title V permit. Since print range 4.1a is a new or modified source, requirements for VEE are from 9 VAC 5-50-80.

All periodic monitoring requirements for VEE were updated to clarify the intent of each requirement. The wording “15-second” was added before “observation” to ensure any single Method 9 observation greater than the stated percentage would trigger a 60 minute Method 9.

7.4 Recordkeeping

Conditions #8 and #12 of the NSR permit establish recordkeeping requirements for each of the

limitations contained in the permit. These records include calculations of emissions and throughput on a rolling 12-month basis. All records must be maintained on site for a period of 5 years and be made available upon request.

7.5 Reporting

The permittee shall comply with the reporting requirements established in accordance with General Condition No. VII.C – VII.F of the Title V permit.

Initial notifications were included in the original NSR permit dated 7/10/2003. Each part of this condition was met. The condition was removed from the permit during the 6/23/2004 amendment.

8. APPLICABLE MACT REQUIREMENTS (40 CFR 63 SUBPART OOOO)

On 5/29/2003, the Printing, Coating and Dyeing of Fabrics and Other Textiles MACT (i.e., 40 CFR 63 Subpart OOOO) was promulgated. Dan River submitted the required initial notification on May 29, 2004. A requirement to comply with applicable requirements from this MACT for the Dan River facility has been included in the current significant modification of the Title V permit. This reference is in Condition IV.A of the permit.

The source has not decided which compliance options will be utilized for this MACT. Dan River is currently reviewing options to obtain minor source status prior to the first compliance date for the MACT. This issue necessitated utilization of a general reference to applicable requirements in lieu of specific requirements for Dan River.

9. COMPLIANCE ASSURANCE MONITORING (CAM)

In accordance with the requirements of 40 CFR 64, Compliance Assurance Monitoring (CAM), review for CAM applicability has been completed. The three conditions that must be met for an emissions unit to be subject to CAM are:

1. emits or has the potential to emit (in the absence of add-on control devices) quantities of one or more regulated air pollutants that exceed major source thresholds,
2. is subject to one or more emission limitations for the regulated air pollutant(s) for which it is major before control, and
3. uses a control device to achieve compliance with one or more of these emission limitations.

A unit must meet all three conditions to be subject to CAM. For an amendment, only the units affected by the proposed change are reviewed. The print range 4.1a does not have any control equipment to meet an emission limitation. The print range 4.1a is the only unit affected by this project. Therefore, no CAM units are associated with this project.

10. SUPPLEMENT ENVIRONMENTAL PROJECT SCHEDULE

There is no Supplemental Environmental Project (SEP) associated with this facility.

11. GENERAL CONDITIONS

The General Conditions have been updated to comply with the current boilerplate.

The permit contains general conditions required by 40 CFR Part 70 and 9 VAC 5-80-110 that apply to all Federal-operating permitted sources. These include requirements for submitting semi-annual monitoring reports and an annual compliance certification report. The permit also requires notification of deviations from permit requirements or any excess emissions.

12. CONFIDENTIAL INFORMATION

The permittee did not submit a request for confidentiality. All portions of the Title V application are suitable for public review.

13. PUBLIC PARTICIPATION

The public notice for this Draft and Proposed significant modification to the Title V permit appeared in the Union Star on 6/8/2005.

Public comment period beginning date: 6/8/2005

Public comment period ending date: 7/7/2005

All written comments should be addressed to the following individual and office:

Patrick Corbett
Senior Environmental Engineer
Virginia Department of Environmental Quality
South Central Regional Office
7705 Timberlake Road
Lynchburg, VA 24502
Phone: (434) 582-5120 ext. 6030
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ptcorbett@deq.virginia.gov